Marine Weather Services

Vision

To meet safety needs through ready access to accurate, timely, easily understood, and technologically advanced products, forecasts, and warnings.

Concept of Operations

Development will continue for AWIPS and the National Center Advanced Weather Interactive Processing System (NAWIPS). These critical systems will provide new, enhanced capabilities, and new data sets to support marine and tropical product generation. New science and technology plans will be implemented to increase forecast and warning accuracy and to meet our customer needs for ready access to easily understood information.

Planned activities will focus on three areas:

- ✓ Enhanced operational services, with emphasis on gridded and graphical products.
- ✓ Improved marine forecast process.
- ✓ An active customer outreach program.

Customer and Partner Requirements

Marine and Coastal Services

- ✓ Integrate National Ocean Service (NOS) Physical Oceanographic Real Time System (PORTS) data with weather information and forecasts.
- ✓ Issue swell direction and period forecasts for coastal, offshore, and high-seas marine zones.
- ✓ Issue wave direction forecasts for the Great Lakes.
- ✓ Issue probabilistic confidence level of marine forecasts.
- ✓ Provide early and accurate port or harbor specific forecasts and warnings.
- ✓ Expand marine-only weather radio.
- ✓ Generate regularly spaced grid of marine observations in all coastal and offshore areas and Great Lakes.
- ✓ Integrate observations for wave period and visibility and swell height, direction, and period.

Tropical Cyclone Services

- ✓ Increase accuracy of tropical cyclone forecasts of track and intensity.
- ✓ Improve storm surge forecasts.

- ✓ Increase accuracy of 34-, 50- and 64-knot wind radii forecasts.

- ✓ Improve tropical cyclone quantitative precipitation estimates.

Link to Science and Technology Infusion Plan

Marine Weather Services

Marine Weather Services support the NOAA mission by providing current and accurate information for marine and coastal interest. This information assists U.S. coastal waters, open oceans, and the Great Lakes. These warnings ensure the safety of life and protection of property. This effort increases marine wind and wave forecast skills, toward fulfilling the STIP goals.

GPRA Performance Measures

GPRA Goal	FY 2003	FY 2004	FY 2005
Hurricane Forecast Track Error	130 nautical miles	129 nautical miles	128 nautical miles
Marine Wind Speed Forecasts - Accuracy*	0.54	0.57	0.60
Marine Wave Height Forecasts - Accuracy*	0.66	0.69	0.72

** The Equitable Skill Score measures the skill of forecasts with an emphasizes on "extreme events".*

Tropical Cyclone Services

Tropical Cyclone Services supports the vision of providing timely and accurate tropical cyclone products by using cutting edge technology in a cost effective manner, improving the economic value of tropical cyclone information, decreasing tropical cyclone related fatalities, and fulfilling the STIP goal of decreasing the 48-hour mean track error.

Product and Service Changes

- ✓ Release Graphical Hurricane Local Statement (HLS) at http://products.weather.gov/. Gather customer feedback.

- ✓ Develop Graphical Hazardous Weather Outlook. Solicit customer feedback beginning April 2005.

- ✓ Issue experimental Marine Point Matrices. Solicit customer feedback through July 2005.

Science and Technology Requirements

- ✓ Provide capability for intersite coordination of WFO-generated gridded forecasts on AWIPS between the Ocean Prediction Center (OPC) and the Tropical Prediction Center (TPC).

- ✓ Continue NCEP development of Great Lakes Wave Model to support WFO marine product generation.

- ✓ Provide gridded guidance of height, period, and direction for additional wave fields.

Milestones by Quarter

1st Quarter

- Implement new guidance products on AWIPS including National Ice Center (NIC) ice edge analyses and sea surface temperatures.

3rd Quarter

- Develop prototype for tropical cyclone hazards graphic.
- Expand tropical cyclone preparedness activities.
- Broaden public education and awareness through key rip current partnerships and activities.

4th Quarter

- Conduct an assessment of NWS capabilities to support United States Coast Guard (USCG) emergency operations.
- Standardize marine Internet page presentations.

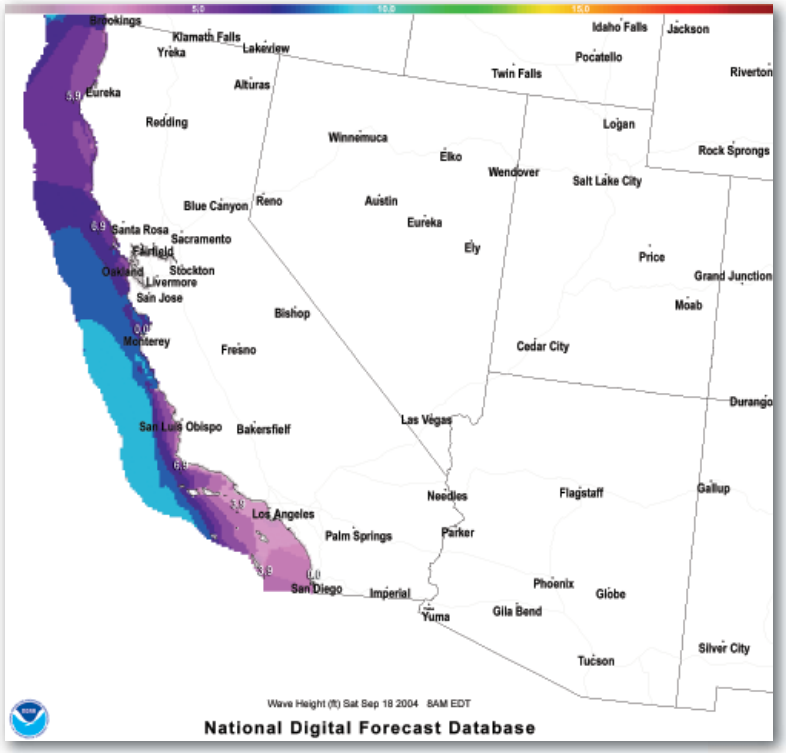
Integrated Requirements

The following five changes will occur in AWIPS:

- ✓ Implement system on AWIPS for Forecasting and Evaluation of Seas and Lakes (SAFESEAS) fog monitoring tool.
- ✓ Include Short Range Ensemble Forecast (SREF) model guidance.
- ✓ Integrate Special Sensor Microwave/Imager (SSM/I) derived wind analyses.
- ✓ Incorporate Fleet Numerical Meteorology and Oceanography Center (FNMOC) Wave Watch III model guidance.
- ✓ Include Navy Operational Global Atmospheric Prediction System (NOGAPS).

Outreach

- ✓ Attend annual marine and tropical cyclone customer and partner meetings.
- ✓ Attend town meetings at boat and trade show events.
- ✓ Distribute rip current outreach and educational materials and events.
- ✓ Sponsor Hurricane Awareness Week.
- ✓ Participate in National Safe Boating Week.
- ✓ Write articles for marine-related magazines.



Example of experimental significant wave height graphic showing the California coastline

Verification

In 2005, the Marine Weather Services will begin verifying the marine forecaster edited model grids to take marine from point to areal verifications.

Today, the Marine Services Program compares a point observation from a marine weather station (such as a buoy) against the most recent forecast for that station to measure performance. Verifying the marine forecaster edited model grids over a marine area will compare the analyzed station observations against the most recent forecaster edited grids.

Regional Initiatives

Alaska

- ✓ Conduct an assessment of marine customer satisfaction through outreach forums.
- ✓ Evaluate the impact of marine observation systems on forecast operations.
- ✓ Enhance volunteer marine observation programs at the Weather Service Office (WSO) level.
- ✓ Investigate the feasibility of providing wave steepness forecasts for the Valdez Narrows.

Central

- ✓ Implement a marine storm and gale verification program.
- ✓ Continue partnership with the Great Lakes Environmental Research Laboratory (GLERL) to prototype and implement a system for forecasting gridded wave height and direction over the Great Lakes.
- ✓ Finalize implementation plan to expand the Great Lakes marine observation network and align forecast, research, verification, and monitoring requirements of the Great Lakes marine community.
- ✓ Support one Great Lakes marine workshop and one Great Lakes operational workshop.
- ✓ Continue NOS partnership to improve and expand the Great Lakes Marine Observing Network (MON) through judicious, acquiring, and siting of remote wind sensors.

Eastern

- ✓ Host Atlantic Hurricane Awareness Tour (HAT) at selected coastal locations.
- ✓ Coordinate at least one TPC/NHC hurricane forecaster office visit.
- ✓ Continue expansion and participation in the Rip Current Program to WFO New York City.
- ✓ Coordinate two forecaster exchanges between two coastal Eastern Region WFOs and NCEP/OPC.

Pacific

- ✓ Initiate a marine forecaster exchange to aide in backup procedures, and enhance new forecaster training techniques.
- ✓ Utilize gridded production software to produce WFO Honolulu's Offshore Waters Forecast (OFF).
- ✓ Rewrite *Mariner's Guide for Hurricane Awareness in the North Atlantic Basin* for Pacific Region customers.

Southern

- ✓ Conduct a marine forecaster workshop to enhance forecaster knowledge, training techniques and methodology.
- ✓ Investigate the feasibility and potential value of standardizing the context of the Surf Zone Forecast (SRF) product for customers and partners of marine services.
- ✓ Enhance and promote a consistent set of robust marine IFPS/GFE Smart-Tools used by forecasters to deliver gridded and graphical marine forecast services.
- ✓ Explore a collaborative, multi-agency effort with the Army Corps of Engineers to develop a local mesoscale model to improve marine forecast services in the coastal environment.
- ✓ Host Gulf Coast HAT at selected coastal locations.

Western

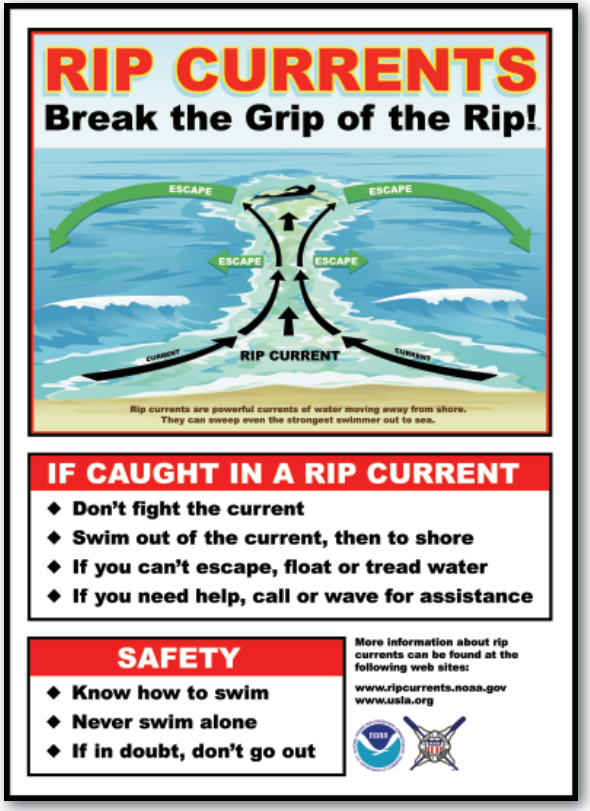
- ✓ Implement wave steepness as optional criteria for Small Craft Advisories for Hazardous Seas (SCAHS).
- ✓ Investigate development of a graphical version of the Wave Watch III text output bulletins; evaluate usefulness.
- ✓ Prototype operational bar harbor entrance forecast.

NWS/NCEP Tropical Analysis and Forecast Branch

- ✓ Conduct an assessment and evaluate customer feedback to reduce the number of marine zones in the Gulf of Mexico OFF product.

NWS/NCEP and OPC

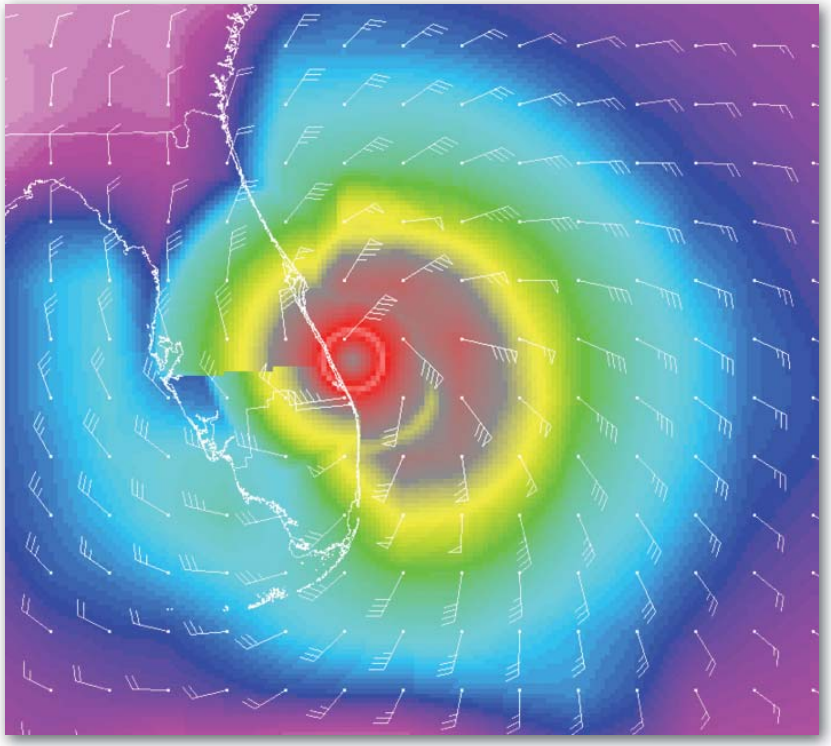
- ✓ Implement 24-hour forecast charts of 500 millibar heights for the Atlantic and the Pacific Oceans.
- ✓ Enhance synergy and expand efficiencies between the OPC and the TAFB.
- ✓ Produce for evaluation a sample set of OPC products, in gridded format, to support customer and partner requirements of marine services.
- ✓ Initiate a collaboration process with the WFOs to explore medium-range forecast guidance for coastal and offshore areas of responsibility.



NOAA's rip currents sign, for posting along beach fronts, by state and local municipalities.

NCEP TPC/NHC

- ✓ Add National Hurricane Center (NHC) historical forecast verification information to the NHC Web page.
- ✓ Decide on operational implementation of second-round U.S. Weather Research Program (USWRP) Joint Hurricane Testbed (JHT) projects with 1-year duration.
- ✓ Conduct three Introduction to Hurricane Preparedness Workshops for local emergency managers.



Gridded wind field around hurricane Frances, illustrating the large swath of tropical cyclone winds over the state of Florida.

- ✓ Conduct a hurricane awareness tour to Caribbean countries and Mexico, and a tour along the U.S. Atlantic, with emphasis on outreach and public education.
- ✓ Conduct an international Regional Area IV Workshop on hurricane forecasting and warning for meteorologists.
- ✓ Complete selection process and second round testing, then begin third round of testing for USWRP/JHT projects.
- ✓ Test and evaluate an experimental Tropical Cyclone VTEC (TCV) watch and warning product in coordination with NWS OST and NCEP Computing Development Branch (CDB).
- ✓ Test experimental gridded wind speed probability product for tropical cyclones.

Contact Information

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